# Maricopa Association of Governments

## 2007 MAG Regional Travel Time & Travel Speed Study

## Appendix B

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# MAG Travel Speed Data Dictionary

## Data Type Synonyms for SQL Server and MS Access

The fields described in this data dictionary are based on SQL server data types. If the data has been exported to MS Access, use the following table to determine the data type:

| Access | SQL |
|---|---|
| date/time | datetime |
| double | float, decimal |
| long integer | Integer (int) |
| text | varchar, char |

## Legend

The following table describes the symbols and variables used in formulas and tables throughout this document:

| Symbol | Description |
|---|---|
| * | Primary Key |
| $i$ | Current record |
| $n$ | Total records |

*Note: The field names described in this document are for feature classes, tables and views. Exporting feature classes to ESRI shape files will result in field names truncated at 8 characters.

## Features

The following are feature classes that are stored inside of a relational database management system (SQL Server) or exported to a personal geodatabase (MS Access). The prefix 'sde' indicates a feature class, which contains spatial data and route measures.

| Feature | Field Name | Data Type | Description |
|---|---|---|---|
| Route | | | Route PolylineM feature. Base routes for directional Linear Reference System |
| | ObjectId* | Integer | Object Identifier where each row is an object (AutoNumber) |
| | RouteId* | Integer | Route Identifier |
| | RouteName | varchar | Directional Route Name |
| | Shape | Integer | ESRI Shape Identifier |
| | StudyID | Integer | Unique identifier for the project |
| | | | |
| Intersection | | | Intersection point feature. An intersection point exists for each route. Two consecutive intersection points on a route define intersection segments (ISseg) |
| | ObjectId* | Integer | Object Identifier where each row is an object (AutoNumber) |

| Feature | Field Name | Data Type | Description |
|---|---|---|---|
| | Control | varchar | Intersection Control:<br>Signal<br>Stop<br>Roundabout<br>Cross Street<br>TWSC – Two Way Stop Control<br>AWSC – All Way Stop Control<br>Signal - No Stop – T intersection; continuous green<br>Ped Signal<br>SPUI – Single Point Urban Intersection<br>Cross Section<br>Jurisdiction<br>External |
| | Intersection | varchar | Name of intersecting street |
| | IntersectionID | integer | Intersection location identifier. Intersection points for all routes at the same location have the same IntersectionID |
| | Measure | float | Route Measure (ft) |
| | RouteId | integer | Route Identifier for sdeRoute |
| | Shape | Integer | ESRI Shape Identifier |

**Event Tables**

The following table describes the tabular data and views of the data stored in the database. Tables containing route identifiers and measures can also be viewed spatially as point or line events using linear referencing and can be exported to feature classes. The prefix 'tbl' indicates tabular data while the prefix 'vw' indicates a view of the data.

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| IntersectionSegment | | | Intersection Segments |
| | ISsegId* | integer | Intersection Segment Identifier based on consecutive intersection segments along a route. $ISsegID_i = (RouteID * 1000) + i_1^n$ |
| | ISseg | varchar | [Upstream Intersection] to [Downstream Intersection] |
| | RouteId | integer | Route Identifier for sdeRoute |
| | StartMeasure | decimal | Upstream route measure |
| | EndMeasure | decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | Control | varchar | Intersection Control:<br>Signal<br>Cross Street<br>TWSC – Two Way Stop Control<br>AWSC – All Way Stop Control<br>Signal - No Stop – T intersection; continuous green<br>Ped Signal<br>SPUI – Single Point Urban Intersection<br>Cross Section<br>Jurisdiction |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | SZwavgSL | integer | School Zone weighted average speed limit. wavgSL including the length of the school zone and school zone speed within the intersection segment |
| | FreeFlowTravelTime | decimal | Free Flow Travel Time.<br>$$FFTT = \frac{EndM - StartM}{wavgSL}$$ |
| | SZFreeFlowTravelTime | decimal | School Zone Free Flow Travel Time.<br>$$SZFFTT = \frac{EndM - StartM}{SZwavgSL}$$ |
| | IntSegId* | integer | Intersection Segment Identifier based on intersection IntersectionIDs:<br>$$IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$$ |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | IntersectionSummarySegmentId | Integer | Identifier of the intersection summary segment that this intersection segment is contained by |
| SpeedLimitSegment | | | Speed Limit Segments |
| | SLsegId* | integer | Speed Limit Segment Identifier based on consecutive speed limit changes along a route. $SLsegID_i = (RouteID * 1000) + i_1^n$ |
| | SpeedLimit | integer | Speed Limit (MPH) |
| | RouteId | integer | Route Identifier for sdeRoute |
| | StartMeasure | decimal | Upstream route measure |
| | EndMeasure | decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| SchoolZoneSegment | | | School Zone Segments. Used to calculate free flow travel time and delay when the school zone is active |
| | SZsegId* | integer | School Zone Segment Identifier |
| | RouteId | integer | Route Identifier for sdeRoute |
| | SZSpeedLimit | integer | School Zone Speed Limit |
| | AMBeginTime | datetime | School Zone Begin Time for the AM |
| | AMEndTime | datetime | School Zone End Time for the AM |
| | PMBeginTime | datetime | School Zone Begin Time for the PM |
| | PMEndTime | datetime | School Zone End Time for the PM |
| | Comment | varchar | Record Comments |
| | StartMeasure | decimal | Upstream route measure |
| | EndMeasure | decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | | | |
| | | | |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| TimePeriodSegment | | | End to end driving limits on a route for each time period |
| | StudyId | integer | Study Identifier |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | StartIntersectionID | integer | Upstream intersection location identifier |
| | EndIntersectionID | integer | Downstream intersection location identifier |
| | Route | varchar | Directional Route Name |
| | StartIntersection | Varchar | Upstream intersection of the summary segment |
| | EndIntersection | Varchar | Downstream intersection of the summary segment |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| vwTimePeriodSummarySegment Average | | | Summary segments between major intersections (one or more IntersectionSegment segments) |
| | IntersectionSummarySegmentId* | integer | Record Identifier (AutoNumber) |
| | RouteId | integer | Route Identifier for sdeRoute |
| | StartIntersectionID | integer | Upstream intersection location identifier |
| | EndIntersectionID | integer | Downstream intersection location identifier |
| | StartMeasure | decimal | Upstream route measure |
| | EndMeasure | decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | RouteName | varchar | Directional Route Name from sdeRoute |
| | StartIntersection | varchar | Upstream intersection name |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | EndIntersection | varchar | Downstream Intersection |
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | SZwavgSL | integer | School Zone weighted average speed limit. wavgSL including the length of the school zone and school zone speed within the intersection segment |
| | FreeFlowTravelTime | decimal | Free Flow Travel Time.<br>$FFTT = \frac{EndM - StartM}{wavgSL}$ |
| | SZFreeFlowTravelTime | decimal | School Zone Free Flow Travel Time.<br>$SZFFTT = \frac{EndM - StartM}{SZwavgSL}$ |
| vwDatafile | | | Unique Run Identifier. One record exists for each route the run traverses. |
| | DatafileId* | integer | Datafile table identifier (AutoNumber) |
| | StudyId | integer | Study Identifier |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | Datafile | varchar | Travel Run Identifier [1234][5][67][8]<br>[1234]=RouteId<br>[5] = PeakPeriodId<br>[67] = EmployeeId<br>[8] = Character [A-Z] to prevent duplicate datafiles |
| | OriginalDatafile | varchar | Original Datafile from field data collection |
| | GISFile | varchar | The shapefile that contains the run |
| | RouteId | integer | Route Identifier for sdeRoute |
| | Route | varchar | Directional Route Name |
| | RunId | varchar | Run identifier by route [Datafile][RouteId] |
| | GPSDate | datetime | GPS Date |
| | minTime | datetime | Start time of run |
| | maxTime | datetime | End time of run |
| | PeakPeriodId | integer | Peak Period Identifier. Several TimePeriodId's can be within one PeakPeriodId<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |
| | AvgTMS | float | Average Time Mean Speed (MPH). The arithmetic average of 1 second GPS speed within the segment. |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | AvgSMS | float | Average Space Mean Speed (MPH). The average speed based on the travel time over the segment. $avgSMS = \frac{\max Measure - \min Measure}{\max Time - \min Time}$ |
| | avgBearing | float | Average GPS Bearing for run |
| | avgPDOP | float | Average GPS Position Dilution of Precision for run. |
| | PositionCount | Integer | The total number of GPS positions within the run |
| | UserId | integer | Driver Record Identifier |
| | StartMeasure | float | Minimum route measure |
| | EndMeasure | float | Maximum route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| tblExclude | | | Specific exclusions from tables and queries based on vwDatafile and vwISsegDatafile. Summary data is excluded from the result tables but the GPS data still exists within tblSpeed. Data is excluded based on the amount of detail provided (if only a datafile is specified then the entire datafile is excluded) |
| | ExcludeId* | integer | Exclusion table Identifier (AutoNumber) |
| | StudyId | integer | Study Identifier |
| | GISFile | varchar | The shapefile that contains the run |
| | Datafile | varchar | Travel Run Identifier [1234][5][67][8]<br>[1234]=RouteId<br>[5] = PeakPeriodId<br>[67] = EmployeeId<br>[8] = Character [A-Z] to prevent duplicate datafiles |
| | RouteId | integer | Route Identifier for sdeRoute |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | IntSegId | integer | Intersection Segment Identifier based on intersection IntersectionIDs: $IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$ |
| | StartMeasure | decimal | Upstream route measure |
| | EndMeasure | decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | Comment | varchar | Reason for excluding data |
| | CommentCategory | varchar | Exclusion Category:<br>1: Accident<br>2: Construction<br>3: Emergency Services<br>4: Incident<br>5: Operations<br>6: Rail Crossing<br>7: School Zone<br>8: School Bus<br>9: Weather<br>10: GPS Error<br>11: Driver Error<br>12: GPS Obstruction<br>13: Other |
| vwISsegDatafile | | | Summary of each travel run by Intersection Segment |
| | STPISDQCId* | Integer | Unique identifier |
| | DatafileId | Integer | Unique Run Identifier. One record exists for each route the run traverses |
| | StudyId | integer | Study Identifier |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | GISFile | varchar | The shapefile that contains the GPS points |
| | Datafile | varchar | Travel Run Identifier [1234][5][67][8]<br>[1234]=RouteId<br>[5] = PeakPeriodId<br>[67] = EmployeeId<br>[8] = Character [A-Z] to prevent duplicate datafiles |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | IntSegId | integer | Intersection Segment Identifier based on intersection IntersectionIDs:<br>$IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$ |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |
| | ISseg | varchar | [Upstream Intersection] to [Downstream Intersection] |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | MinTime | datetime | Minimum GPS time within IndSegId |
| | MaxTime | datetime | Maximum GPS time within IndSegId |
| | MinM | decimal | Minimum route measure within IndSegId |
| | MaxM | decimal | Maximum route measure within IndSegId |
| | AvgSpeed | float | Average Speed (MPH)<br>AvgSMS if (EndMeasure-StartMeasureeasure) ≥ 1000 ft<br>or AvgTMS is NULL<br>AvgTMS if (EndMeasure-StartMeasureeasure) < 1000 ft |
| | AvgSMS | float | Average Space Mean Speed (MPH). The average speed based on the travel time over the segment.<br>$avgSMS = \frac{\max Measure - \min Measure}{\max Time - \min Time}$ |
| | AvgTMS | float | Average Time Mean Speed (MPH). The arithmetic average of 1 second GPS speed within the segment. |
| | RunningSpeed | float | The arithmetic average of 1 second GPS speed points excluding stop delay (> 3 MPH) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | IsSchoolZoneActive | bit | 0 = No (school zone inactive during this run)<br>1 = Yes (school zone active during this run) |
| | TravelTime (TT) | Float | Travel Time (sec) = MaxTime - MinTime |
| | FreeFlowTravelTime (FFTT) | float | Free Flow Travel Time (sec).<br>$FFTT = \frac{\min Time - \max Time}{wavgSL}$ |
| | RunningTime | float | Running Time (sec) = TravalTime - StopDelay |
| | QueueMeasure | decimal | Route measure at the first point the vehicle stopped within ISseg (< 3 MPH) |
| | QueuePosition | decimal | Position in queue from downstream intersection (ft) = EndMeasure – QueueMeasure |
| | SegmentDelay | Decimal | Segment Delay (sec) FreeFlowTravelTime-TT |
| | StopDelay | Decimal | Stop Delay (sec) Amount of time speed is < 3 MPH |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | MidBlockDelay | decimal | Mid-Block delay (sec) $(Length)\times\left(\frac{1}{RunningSpeed}-\frac{1}{FreeFlowSpeed}\right)$ |
| | ControlDelay | Decimal | Control Delay (sec) = SegmentDelay - MidBlockDelay |
| | Control | varchar | Intersection control type (tblISseg.Control) |
| | LOS | char(1) | Level Of Service from the Highway Capacity Manual.<br>Value is from one of the following tables depending on the downstream control:<br>tblSignalLOS<br>tblUnSignalLOS<br>tblUrbanLOS |
| | LengthFt | Decimal | Segment Length (ft) = EndMeasure – StartMeasureeasure |
| | | | |
| vwTimePeriodISseg | | | Data collection status by time period for each intersection segment (tblISseg) included in the study |
| | StudyId | integer | Study Identifier |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | RouteId | Integer | Route Identifier for sdeRoute |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | IntSegId | integer | Intersection Segment Identifier based on intersection IntersectionIDs: $IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$ |
| | ISsegId | integer | Intersection Segment Identifier based on consecutive intersection segments along a route. $ISsegID_i = (RouteID * 1000) + i_1^n$ |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | RequiredRuns | Integer | The number of required runs as specified in tblTimePeriod |
| | CompletedRuns | Integer | The count of the number of runs already completed for this time |
| | RemainingRuns | Integer | RequiredRuns – Completed Runs. Set to zero if the number of completed runs is greater than the required runs. |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |
| | ISseg | varchar | [Upstream Intersection] to [Downstream Intersection] |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| vwTimePeriodISsegAverage | | | Summary of all travel runs within an intersection segment by time period |
| | StudyTimePeriodRouteSegmentId* | Integer | Unique identifier |
| | StudyId | integer | Study Identifier |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | IntSegId | integer | Intersection Segment Identifier based on intersection IntersectionIDs: $IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$ |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |
| | ISseg | varchar | [Upstream Intersection] to [Downstream Intersection] |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |
| | Runs | Integer | The count of runs this record summarizes |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | Stops | Integer | The count of runs that incur stop delay (< 3 MPH) within a segment. Even if a vehicle stops more than once on one run within a segment, it is counted as one stop |
| | pctStops | Float | Percent Stops = Stops/Runs |
| | AvgSpeed | float | Average of vwISsegDatafile.AvgSpeed (MPH) |
| | StdSpeed | Float | Standard deviation of vwISsegDatafile.AvgSpeed (MPH) |
| | Error90 | Float | 90% Confidence Interval based on the t-distribution. There is a 90% probability that the average speed is between [avgSpeed – Error90] & [avgSpeed + Error90] |
| | Error85 | Float | 85% Confidence Interval based on the t-distribution. There is a 85% probability that the average speed is between [avgSpeed – Error85] & [avgSpeed + Error85] |
| | AvgSMS | float | Average Space Mean Speed (MPH). Average of vwISsegDatafile.AvgSMS |
| | AvgTMS | float | Average Time Mean Speed (MPH. Average of vwISsegDatafile.AvgTMS |
| | avgRunningSpeed | float | The arithmetic average of 1 second GPS speed points excluding stop delay (> 3 MPH) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | ActiveSchoolZoneRuns | bit | Count of runs with vwISsegDatafile.IsSchoolZoneActive = true |
| | avgTT | Float | Average of vwISsegDatafile.TravelTime (sec) |
| | avgFreeFlowTravelTime | Float | Average of vwISsegDatafile.FreeFlowTravelTime (sec) |
| | avgRunningTime | float | vwISsegDatafile.avgRunningTime (sec) |
| | minQMeasure | float | Minimum vwISsegDatafile.QueueMeasure |
| | avgQMeasure | float | Average vwISsegDatafile.QueueMeasure |
| | maxQMeasure | float | Maximum vwISsegDatafile.QueueMeasure |
| | minQPosition | float | Minimum vwISsegDatafile.QueueMeasure |
| | avgQPosition | float | Average vwISsegDatafile.QueueMeasure |
| | maxQPosition | float | Maximum vwISsegDatafile.QueueMeasure |
| | pctPostedSpeed | Float | AvgSpeed/wavgSL |
| | avgSegmentDelay | Float | Average vwISsegDatafile.SegmentDelay (sec) |
| | avgStopDelay | Float | Average vwISsegDatafile.StopDelay (sec) |
| | avgMidBlockDelay | Float | Average vwISsegDatafile.MidBlockDelay (sec) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | avgControlDelay | Float | Average vwISsegDatafile.ControlDelay (sec) |
| | avgSegmentDelayMi | Float | avgSegmentDelay/Length (sec/mile) |
| | Control | varchar | Intersection control type (tblISseg.Control) |
| | LOS | char(1) | Level Of Service from the Highway Capacity Manual.<br>Value is from one of the following tables depending on the downstream control:<br>tblSignalLOS<br>tblUnSignalLOS<br>tblUrbanLOS |
| | LengthFt | Decimal | Segment Length (ft) = EndMeasure – StartMeasure |
| vwTimePeriodSegmentAverage | | | Summary of all travel runs for a time period within each time period segment, or end to end route summary by time period (see vwTimePeriodSegment). Calculated by aggregating results from vwTimePeriodISsegAverage |
| | StudyTimePeriodRouteSegmentId* | Integer | Unique identifier |
| | StudyId | integer | Study Identifier |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | StartIntersection | Varchar | Upstream intersection of the summary segment |
| | EndIntersection | Varchar | Downstream intersection of the summary segment |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |
| | avgRuns | Integer | The average count of runs within each intersection segment (vwTimePeriodISsegAverage.Runs) |
| | totalStops | Integer | The count of vwTimePeriodISsegAverage.Stops |
| | avgStopsPerRun | Float | totalStops/avgRuns |
| | avgPctStops | Float | Average of vwTimePeriodISsegAverage.Runs / vwTimePeriodISsegAverage.Stops |
| | wavgSpeed | float | Distance weighted average vwTimePeriodISsegAverage.AvgSMS (MPH) |
| | wavgSMS | float | Distance weighted average vwTimePeriodISsegAverage.AvgTMS (MPH) |
| | wavgTMS | float | Distance weighted average vwTimePeriodISsegAverage.AvgSpeed (MPH) |
| | wavgRunningSpeed | float | Distance weighted average vwTimePeriodISsegAverage.AvgRunningSpeed (MPH) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | EndtalActiveSchoolZoneRuns | bit | Count of runs with vwISsegDatafile.IsSchoolZoneActive = true |
| | TotalAvgTT | Float | Sum of vwTimePeriodISsegAverage.AvgTT (sec) |
| | TotalAvgFreeFlowTravelTime | Float | Sum of vwTimePeriodISsegAverage.AvgFreeFlowTravelTime (sec) |
| | TotalAvgRunningTime | float | Sum of vwTimePeriodISsegAverage.AvgRunningTime (sec) |
| | wavgPctPostedSpeed | Float | wavgSpeed/wavgSL |
| | TotalAvgSegmentDelay | Float | Sum of vwTimePeriodISsegAverage.AvgSegmentDelay (sec) |
| | TotalAvgStopDelay | Float | Sum of vwTimePeriodISsegAverage.AvgStopDelay (sec) |
| | TotalAvgMidBlockDelay | Float | Sum of vwTimePeriodISsegAverage.AvgStopDelay (sec) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | TotalAvgControlDelay | Float | Sum of vwTimePeriodISsegAverage.AvgControlDelay (sec) |
| | avgSegmentDelayPerMile | Float | TotalAvgSegmentDelay/Length (sec/mile) |
| | LengthFt | Decimal | Segment Length (ft) = EndMeasure – StartMeasureeasure |
| vwStudyTimePeriodISSegAverage | | | Summary of all travel runs for a time period within each vwIntersectionSummarySegment. Calculated by aggregating results from vwTimePeriodISsegAverage |
| | StudyTimePeriodRouteSegmentId* | Integer | Unique identifier |
| | IntersectionSummarySegmentId* | integer | Record Identifier (AutoNumber) |
| | StudyId | integer | Study Identifier |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |
| | StartIntersection | Varchar | Upstream intersection of the summary segment |
| | EndIntersection | Varchar | Downstream intersection of the summary segment |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |
| | StartTime | varchar | Time Period Start Time |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |
| | avgRuns | Integer | The average count of runs within each intersection segment (vwTimePeriodISsegAverage.Runs) |
| | totalStops | Integer | The count of vwTimePeriodISsegAverage.Stops |
| | avgStopsPerRun | Float | totalStops/avgRuns |
| | avgPctStops | Float | Average of vwTimePeriodISsegAverage.Runs / vwTimePeriodISsegAverage.Stops |
| | wavgSpeed | float | Distance weighted average vwTimePeriodISsegAverage.AvgSMS (MPH) |
| | wavgSMS | float | Distance weighted average vwTimePeriodISsegAverage.AvgTMS (MPH) |
| | wavgTMS | float | Distance weighted average vwTimePeriodISsegAverage.AvgSpeed (MPH) |
| | wavgRunningSpeed | float | Distance weighted average vwTimePeriodISsegAverage.AvgRunningSpeed (MPH) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | wavgSL | decimal | Weighted Average Speed Limit. Weighted by length of speed zones where the speed limit changes between intersections<br>$$wavgSL = \frac{\sum_i d_i}{\sum_i \frac{d_i}{SL_i}}$$<br>where:<br>SL = Speed Limit<br>d = Length of Speed Limit zone |
| | TotalActiveSchoolZoneRuns | bit | Count of runs with vwISsegDatafile.IsSchoolZoneActive = true |
| | TotalAvgTT | Float | Sum of vwTimePeriodISsegAverage.AvgTT (sec) |
| | TotalAvgFreeFlowTravelTime | Float | Sum of vwTimePeriodISsegAverage.AvgFreeFlowTravelTime (sec) |
| | TotalAvgRunningTime | float | Sum of vwTimePeriodISsegAverage.AvgRunningTime (sec) |
| | wavgPctPostedSpeed | Float | wavgSpeed/wavgSL |
| | TotalAvgSegmentDelay | Float | Sum of vwTimePeriodISsegAverage.AvgSegmentDelay (sec) |
| | TotalAvgStopDelay | Float | Sum of vwTimePeriodISsegAverage.AvgStopDelay (sec) |
| | TotalAvgMidBlockDelay | Float | Sum of vwTimePeriodISsegAverage.AvgStopDelay (sec) |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | TotalAvgControlDelay | Float | Sum of vwTimePeriodISsegAverage.AvgControlDelay (sec) |
| | avgSegmentDelayPerMile | Float | TotalAvgSegmentDelay/Length (sec/mile) |
| | LengthFt | Decimal | Segment Length (ft) = EndMeasure – StartMeasureeasure |
| tblSpeed VideoGPSPoint GPSpoints | | | 1 second GPS positions. Additional related fields are included in VideoGPSPoint events. |
| | GPSSpeedId* | integer | 1 second GPS position Identifier (Auto Number) |
| | StudyId | integer | Study Identifier |
| | RouteId | Integer | Route Identifier for sdeRoute |
| VideoGPSPoint | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| VideoGPSPoint | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| VideoGPSPoint | DatafileId | Integer | Unique Run Identifier. One record exists for each route the run traverses |
| VideoGPSPoint | IntSegId | integer | Intersection Segment Identifier based on intersection IntersectionIDs:<br>$IntSegID_i = (IntID_{Upstream} * 10000) + (IntID_{Downstr}$ |
| VideoGPSPoint | StudyName | Varchar | Name of the study during which this data was collected |
| VideoGPSPoint | Route | varchar | Directional Route Name |
| VideoGPSPoint | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| VideoGPSPoint | PeriodStartTime | varchar | Time Period Start Time |
| VideoGPSPoint | PeriodEndTime | varchar | Time Period End Time |
| | GISFile | varchar | The shapefile that contains the GPS points |
| | Datafile | varchar | Travel Run Identifier [1234][5][67][8]<br>[1234]=RouteId<br>[5] = PeakPeriodId<br>[67] = EmployeeId<br>[8] = Character [A-Z] to prevent duplicate datafiles |
| VideoGPSPoint | ISseg | varchar | [Upstream Intersection] to [Downstream Intersection] |
| | Speed | decimal | GPS Speed in MPH |
| | Bearing | decimal | GPS Bearing relative to last position |
| | PDOP | decimal | Position Dilution of Precision – a measure of the current satellite geometry. The lower the PDOP value, the more accurate the GPS positions. |
| | GPSDate | datetime | GPS Date |
| | GPSTime | datetime | GPS Time |
| | Measure | decimal | Route Measure (ft) |
| | Offset | decimal | Distance of GPS position from route (ft) |
| | X | Decimal | GPS easting coordinate |
| | Y | Decimal | GPS northing coordinate |
| | Height | Decimal | GPS elevation (±50 ft) |
| vwVideoDatafile | | | This tables provides a link to VideoGPSPoint for viewing digital videos |
| | VideoDatafileId | Integer | Unique identifier (AutoNumber) |
| | DatafileId | Integer | Unique Run Identifier. One record exists for each route the run traverses |
| | StudyId | integer | Study Identifier |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| | Datafile | varchar | Travel Run Identifier [1234][5][67][8]<br>[1234]=RouteId<br>[5] = PeakPeriodId<br>[67] = EmployeeId<br>[8] = Character [A-Z] to prevent duplicate datafiles |
| | GISFile | varchar | The shapefile that contains the GPS points |
| | RouteId | Integer | Route Identifier for sdeRoute |
| | VideoFileName | varchar | Name of the video file for this run |
| | VideoGPSTime | datetime | GPS time that corresponds to video elapsed time |
| | VideoElapsedTime | datetime | Elapsed time into the video when real world time = VideoGPSTime |
| | StudyName | Varchar | Name of the study during which this data was collected |
| | Route | varchar | Directional Route Name |
| | GPSDate | datetime | GPS Date |
| | PeakPeriodId | integer | Peak Period Identifier<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | TimePeriodId | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | StartTime | varchar | Time Period Start Time |
| | EndTime | varchar | Time Period End Time |
| | PeakPeriod | varchar | Peak Period, AM, Mid-Day (MD), PM |
| | StartMeasure | Decimal | Upstream route measure |
| | EndMeasure | Decimal | Downstream route measure |
| | Offset | integer | Offset from route for display as GIS event data |

**Support Tables**

The following table lists the SQL views: queries of the data stored in the feature datasets and tables. If exported to MS Access, the views are a snapshot of the data returned by the query and appear as tabular data. The prefix 'vw' indicates a view of the data.

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| tblTimePeriod | | | Time Periods. Data outside these time period is not included in the summary tables or results |
| | TimePeriodId* | integer | Time Period Identifier. Several TimePeriodId's can be within one PeakPeriodId |
| | PeakPeriodId | integer | Peak Period Identifier. Several TimePeriodId's can be within one PeakPeriodId<br>1 = AM<br>2 = Mid-Day (MD)<br>3 = PM |
| | StudyId | integer | Study Identifier |
| | StartTime | datetime | Time Period Start Time. Includes 5 minutes before DisplayStartTime if necessary. |
| | EndTime | datetime | Time Period End Time. Includes 5 minutes after dET if necessary. |
| | DisplayStartTime | datetime | Display Start Time for period |
| | DisplayEndTime | datetime | Display End Time for period |
| | Offset | integer | Offset from route for display as GIS event data |
| | RequiredRuns | integer | The required number of runs on each segment for this time period |
| | RequiredError | decimal | The minimum error required to reduce the acceptable number of runs |
| | RequiredConfidence | decimal | The confidence interval required to reduce the acceptable number runs |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| tblSignalLOS | | | Signalized Intersection Level Of Service. The following intersection control applies for this LOS table:<br>Signal<br>Signal - No Stop<br>SPUI<br>Ped Signal |
| | ControlDelayLL | decimal | Control Delay Lower Limit (sec/veh) |
| | ControlDelayUL | decimal | Control Delay Upper Limit (sec/veh) |
| | LOS* | char | Level Of Service |
| tblUnSignalLOS | | | Stop Controlled Intersection Level Of Service. The following intersection control applies for this LOS table:<br>AWSC<br>Flashing Red<br>Roundabout<br>TWSC<br>Stop |
| | ControlDelayLL | decimal | Control Delay Lower Limit (sec/veh) |
| | ControlDelayUL | decimal | Control Delay Upper Limit (sec/veh) |
| | LOS* | char | Level Of Service |

| Table | Field Name | Data Type | Description |
|---|---|---|---|
| tblUrbanLOS | | | Uncontrolled Intersection Level Of Service. The following intersection control applies for this LOS table:<br>City Limit<br>Cross Section<br>Cross Street<br>Flashing Yellow<br>Jurisdiction |
| | SpeedLL | float | Average Speed Lower Limit |
| | SpeedUL | float | Average Speed Upper Limit |
| | FFSLL | float | Free Flow Speed Lower Limit |
| | FFSUL | float | Free Flow Speed Upper Limit |
| | LOS* | char(1) | Level Of Service |
| tblstat | | | Two-sided t-distribution statistics used to compute probability of error |
| | n* | integer | number of runs |
| | t99 | decimal | t-statistic for a 99% confidence interval |
| | t95 | decimal | t-statistic for a 95% confidence interval |
| | t90 | decimal | t-statistic for a 90% confidence interval |
| | t85 | decimal | t-statistic for a 85% confidence interval |
| | t80 | decimal | t-statistic for a 80% confidence interval |
| | t75 | decimal | t-statistic for a 75% confidence interval |